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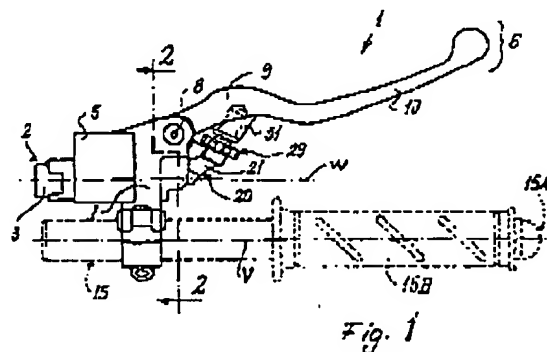
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(54) **Hydraulic master cylinder, reservoir and lever assembly for motorcycle**

(57) An assembly unit (1) of pump, front brake system fluid tank and brake or clutch driving lever of a motorcycle includes, in addition to these parts that is pump (2), tank (5) and lever (6), a part (33) of attachment of this assembly unit to handlebar (15) of vehicle, this handlebar having an end part (15A) provided with a manipulation knob (15B). Lever (6) and brake system (2) fluid pump are located on different planes (X,Z), lever (6) lying on same plane of handlebar (15) or at least of end part (15A) of this last one where manipulation knob is placed (15B).



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Description

It is the object of this discovery an assembly unit made of a pump, a tank for front brake system fluid and a brake or clutch driving lever of a motorcycle according to preamble of principal claim.

In a motorcycle or in a vehicle with two or three wheels, an assembly unit of above mentioned type (that will also be defined in the course of this description pump-tank-lever assembly unit) is usually constructed with pump and clutch or brake lever placed on the same plane on which handlebar also lies or at least its end part provided with a knob. In this known solution, pump is placed in front of handlebar. This location (coplanarity of pump, lever and handlebar and pump position in reference to this last one) causes various problems connected with overall dimensions that above mentioned assembly unit shows. In particular, above mentioned positioning takes to a compulsory advancement of instrument assembly of vehicle placed in front of handlebar in order to allow optimum "drivability" of a motorcycle and, in particular, to obtain an acceptable steering angle especially for homologation purposes of vehicle. In addition to above mentioned advancement, instrument assembly (or dashboard) must also be placed in a lifted position with reference to handlebar plane, as a consequence, owing to this advancement and lift, from vehicle fairing may not show an adequate aerodynamic profile; as a result, difficulties may arise in reaching optimum performances, in limited consumptions and for a correct formulation from a stylistic point of view.

Configuration of pump-tank-lever assembly unit and relative location of these parts has an influence also on oil tank position with reference to dashboard; namely both in the case that tank is separate from pump and attached with appropriate support brackets, and in the case that it is directly connected with pump, there are important overall dimensions problems and especially of visibility of instruments and of the road.

In addition, pump-tank-lever known assembly units are often of difficult attachment to handlebar and usually show a bracket with two locking screws located in an uncomfortable position to be reached when either assembling or disassembling this unit on handlebar.

Purpose of present discovery is that to offer a pump-tank-lever assembly unit of an improved type with reference to similar known assembly units.

In particular, purpose of present discovery is that to offer an assembly of mentioned type in which its various parts are located in mutual relation in order that small overall dimensions are obtained and not to prevent or restrict reading of instrument panel and neither to compel to choices of types of fairings or particular front domes and which may have a not optimum aerodynamic profile.

Purpose of this discovery is that to provide a pump-tank-lever assembly unit of an improved type with reference to known similar assembly units.

In order to have a better understanding of present discovery it is enclosed for only indicative reasons, but not restrictive ones, following drawing, in which:

figure 1 shows a top view of a pump-tank-lever assembly unit designed according to present discovery;

figure 2 shows a cross section view along line 2-2 in figure 1;

figure 3 shows a particular view of lever of assembly unit of figure 1; and

figure 4 shows an enlarged view of a detail indicated with K in figure 3.

With reference to mentioned figures, a pump-tank-lever assembly unit according to this discovery is generally indicated with 1 and it includes a pump 2 showing a cylindrical body 3, preferably in light alloy within which a small piston is placed (moving up and down), not shown, provided with appropriate and known sealing parts. Pump is connected to a tank 4 containing fluid of braking system and it is driven (in order to determine in known way operation of usual braking units of motor vehicle) by a lever 6 pivoted in 8 to a body 7 of assembly unit 1 and to which pump 2 is attached.

Lever 6 shows a first part 9 substantially coplanar with body 3 of pump 2 and pivoted to body 7 of assembly unit 1, and a second part 10 (which user usually operates in order to brake vehicle) located in different plane with reference to first part 9 and with reference to body 3 of pump. This second part 10 is located coplanar with a handlebar 15 of motorcycle or at least with an end part 15A of this handlebar on which a usual knob is placed 15B. In this way, according to innovative characteristic of discovery, body 3 of pump 1 is located (with its longitudinal axis W) on a plane Z which is different with reference with that X containing second part 10 of lever 6 (that it is nevertheless related to lever portion with which user cooperates and that can therefore be to all respects identified with same lever) and handlebar 15 or at least part 15A of this last one; this axis W is preferably and advantageously parallel to that longitudinal V of handlebar 15 (or of its end part 15A), but, as said, it does not lie any longer (as in known solutions) on same plane X of this last one. Pump is displaced towards bottom (or towards plane on which motorcycle is moving) with reference to plane X and and this displacement has a value equal to "L" (see figure 2) well quantifiable. As a consequence, by this lowering it is also obtained a moving back of pump body 3, and thus an assembly unit 1 which has smaller overall dimensions with consequent possibility to obtain wide steering angles, in particular those required for homologation in various countries of the world.

This new position of pump body 3 also allows to provide in front part of motorcycle necessary space for providing on pump body 3 a tank assembled directly on pump, with an appropriate shape capable to limit overall

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dimensions of same assembly unit 1.

Finally, greater compactness of assembly unit 1 (with reference to similar already known pump-tank-lever assembly units) allows to obtain fairings of motorcycle and in particular domes in a correct aerodynamical shape.

Lever 6 cooperates with a part 20 in adjustment of piston stroke placed in pump 3 body or capable to control operation of this pump on braking circuit fluid. This part 20 includes a swing type lever 21 provided at one of its end parts of a part 22 capable to cooperate with above said piston and at other end part of a discoidal unit 25 provided, on one of its surfaces 26, of opposite protuberances 27 capable to cooperate with cavities 27A present on a flat end surface 28 of a threaded body 29 movable within a housing 30 provided in a portion 31 of lever 6. By inserting or by taking out this body 29 from its relevant housing 30, a change in lever 21 operation is obtained on piston of pump body 3 and as a result in the braking action of this pump.

Pump-tank-lever assembly unit 1 is associated with handlebar 15 by means of a unit or bracket 33 which has a first semicollar 34 solidly connected with pump body 3 and a second semicollar 35 pivoted to first one in 36. On hub 37 operating as a pivot an elastic anti-takingout safety ring 38 is placed. These semirings are mutually lockable by means of a screw 39 with a position axis incident on plane X and placed in sides of handlebar. This makes easier locking and opening of unit 33 without that operator be troubled by pump 2 presence and by other parts of assembly 1 applied to a front assembly unit with a lever operating on vehicle brakes from handlebar 15.

An embodiment of discovery has been described. Other ones are still nonetheless possible (for example that related to assembly unit including clutch lever), also these last ones are to be considered included in scope of present document.

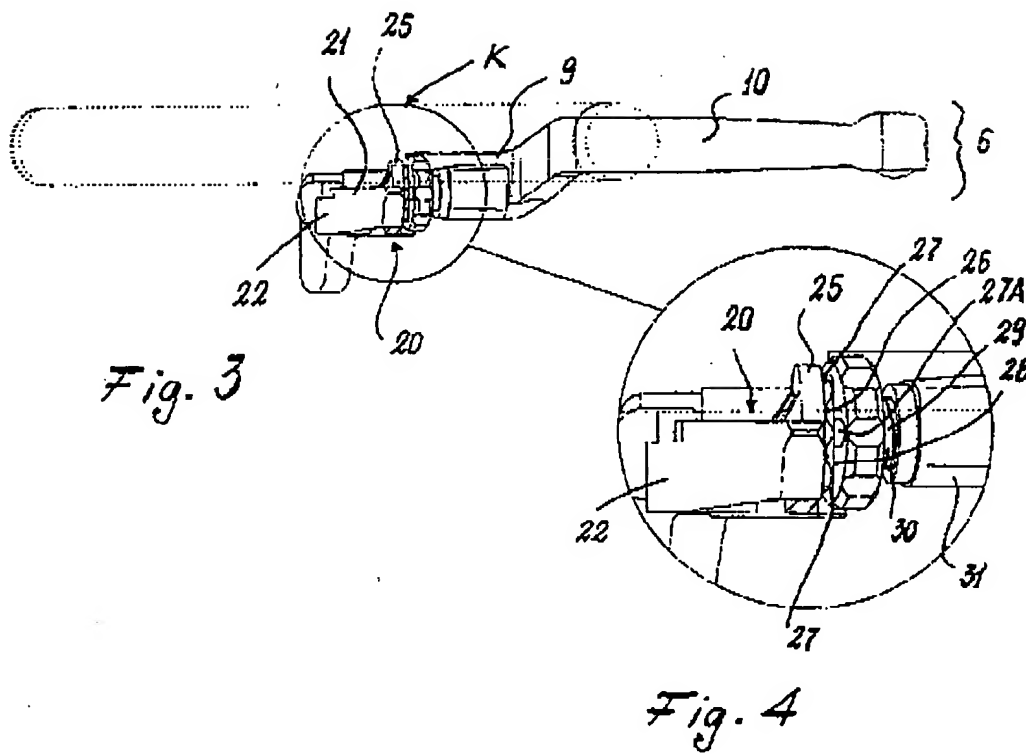
Claims


1. Assembly unit (1) of pump, tank of front braking system fluid and driving lever of brake or of clutch of a motorcycle, including in addition to these units or pump (2), tank(5), and lever (6), a part (33) of attachment of this assembly to handlebar (15) of vehicle, this handlebar having an end part (15A) provided with a handling knob (15B), characterized in that lever (6) and braking system fluid pump (2) are located on different planes (X, Z), lever (6) positioned on same plane of handlebar (15) or at least of end part (15A) of this last one where handling knob is placed.
2. Pump-tank-lever assembly unit as illustrated in claim 1, characterized in that different planes (X, Z) on which they lie, respectively, lever (6) and handlebar and pump (2) are parallel and mutually sepa-

rated, plane (Z) on which pump (2) is located is placed under plane (X) on which lever (6) and handlebar are located.

3. Pump-tank-lever assembly unit as illustrated in claim 1, characterized in that a body (7) is included to which a body of pump (3) is attached, and to this body lever (6) is hinged, this last one showing two portions (9,10), located in different planes, second portion (10) being coplanar with handlebar (15) and being capable to be engaged by user in order to act on usual braking units of vehicle or on clutch of this last one.
4. Pump-tank-lever assembly unit as illustrated in claim 3, characterized in that lever includes a portion (31) to which a control unit is associated (29) capable to act as an end limit for movement of a part (20) which drives pump (2) of braking system fluid.
5. Pump-tank-lever assembly as illustrated in claim 4, characterized in that adjustable unit (29) is threaded and cooperates with a housing (30) provided in portion (31) of lever (6), said unit including an end surface (28) provided with at least a housing (27A) capable to cooperate with protuberant parts (27) associated with a discoidal unit (25) provided at one end part of part (20) which drives pump (2).
6. Pump-tank-lever assembly unit as illustrated in claim 1, characterized in that a bracket part (33) is included for attachment to handlebar (15).
7. Pump-tank-lever assembly unit as illustrated in claim 5, characterized in that bracket unit (33) includes a first semicollar (34) attached to pump body (3) and a second semicollar (35) hinged to first one (in 36), a locking screw being provided for these semicollars (34,35) having a positioning plane incident in plane (X) containing handlebar and located in sides of this last one.

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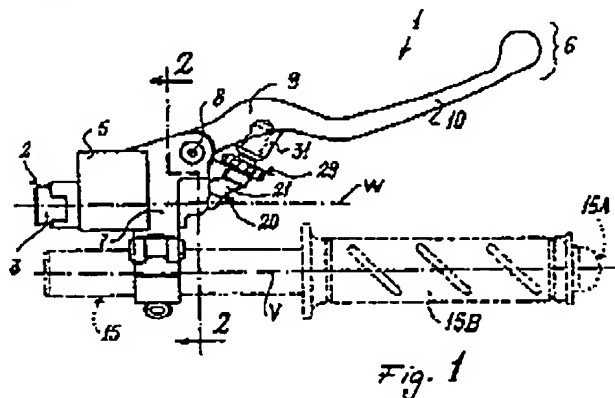
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manipulation knob (15B). Lever (6) and brake system (2) fluid pump are located on different planes (X,Z), lever (6) lying on same plane of handlebar (15) or at least of end part (15A) of this last one where manipulation knob is placed (15B).



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EUROPEAN SEARCH REPORT

Application Number
EP 98 11 3344

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl.8)
P, A	EP 0 792 795 A (SHARP SIMON ; WEATHERILL IAN (GB)) 3 September 1997 (1997-09-03) * figure 1 * * column 3, line 21 - line 29 * -----	1	B62L3/02 B62K23/06
			TECHNICAL FIELDS SEARCHED (Int Cl.8)
			B62L B62K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		19 May 2000	Beckman, T
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention G : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 98 11 3344

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EPD FORM P0011

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82